

Appln No. 09/703,264

Amdt date July 15, 2004

Reply to Office action of April 15, 2004

REMARKS/ARGUMENTS

Claims 1-39 are pending in this application. Claims 1, 11, 22, 33, and 37 are amended.

Claim 11 is rejected under 35 U.S.C. 102(b) as being anticipated by Eppler Jr. et al. (US 5,600,714). Claims 1-3, 6, 8-10, 22, 23, 33, 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eppler, in view of Finn (5,706,344). Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eppler as applied to claim 11, and further in view of Finn. Claims 4, 21, 32, 35, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eppler and Finn as applied to claims 1, 11, 22, 33, 37, and further in view of Sih (US 5,732,134). Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eppler and Finn as applied to claim 1 above, and further in view of Sellenslagh et al. (US 3,433,898). Claims 7, 34, and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eppler and Finn as applied to claims 1, 6, 33, and 37, and in further view of Hasegawa (US 5,905,717). Claims 13-15, 24, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eppler and Finn as applied to claims 11, 12, 22, 23, and further in view of Isenburg et al. (US 5,570,295).

Applicants submit that all of the pending claims in this application are patentable over the cited references, and reexamination and reconsideration of the rejections and allowance of this application are respectfully requested.

Independent claims 1 recites "a single adaptive filter having filter coefficients adapted to cancel an echo in a near

**Appln No. 09/703,264**

**Amdt date July 15, 2004**

**Reply to Office action of April 15, 2004**

end signal, the echo comprising at least a portion of a far end telephony signal and at least a portion of a secondary audio signal."

Eppler does not disclose nor does it suggest the above limitations. Rather, the system of Eppler requires two echo cancellors each including a filter. Therefore, the system of Eppler requires two filters, one for acoustic noise and one for line signal. A room acoustic echo canceler (24 in Fig. 1) "compares the output of amplifier 76 to the signal picked up by microphone 12, producing a different signal which is sent to room acoustic echo canceler 24. This allows echo canceler 24 to continually adjust parameters, that is to say, to continually adjust the amplitude of the echoes until a set of amplitudes for each of the echoes is reached which allows the white noise signal output by speaker 58 . . . " (Col. 8, lines 8-16, emphasis added). Therefore the echo canceler 24 includes a filter for acoustic signals for "continually adjust[ing] the amplitude of the echoes."

In addition to the echo canceler 24, the system of Eppler requires a second echo canceller. That is the Line Hybrid echo canceller (46 in Fig. 1) for cancelling the echo in the line, that is far end signal. The "room acoustic echo canceler 24 and the line hybrid echo canceler 46 are trained during installation for an initial set of scaling parameters corresponding to the user's room and the telephone line, and these scaling parameters are the starting point for the system each time the system is turned on." (Col. 7, lines 47-53). As a result, the Line Hybrid echo canceller 46 also includes a filter for filtering

**Appln No. 09/703,264**

**Amdt date July 15, 2004**

**Reply to Office action of April 15, 2004**

the line signal. Therefore, it is clear that the system of Eppler includes two filters.

In fact, Eppler emphasizes that Hybrid echo canceller 46 "which is illustrated in FIG. 2 in and of itself forms no part of the present invention and is well known in the art and commercially on the market in the form of the above-referenced Motorola integrated circuit, which appears as a single chip 70 as illustrated in FIG. 1." (Col. 6, lines 47-51.)

Similarly, Finn discloses at least two filters; each of the acoustic echo cancelers 36 and 60 have a filter. That is, the acoustic echo canceler 36 "is preferably an adaptive finite impulse response filter having sufficient tap length to model the acoustic path." (Col. 3, lines 43-44). "The far-end acoustic echo canceller 60 preferably operates in a manner similar to the near-end acoustic echo canceller 36. The far-end acoustic echo canceller 60 inputs the combined near-end voice and audio signal from signal sensor 50 through lines 51 and 106. The acoustic echo canceller 60 is preferably an adaptive finite impulse response filter having sufficient tap length to model the acoustic path." (Col. 4, lines 51-58).

In contrast, the present invention uses "a single adaptive filter" which "requires less memory and processing resources." (Specification, page 7, lines 27-28).

Therefore, neither Eppler nor Finn, alone or in combination, teach or disclose "a single adaptive filter having filter coefficients adapted to cancel an echo in a near end signal, the echo comprising at least a portion of a far end telephony signal and at least a portion of a secondary audio

**Appln No. 09/703,264**

**Amdt date July 15, 2004**

**Reply to Office action of April 15, 2004**

signal," as recited by claim 1. Accordingly, independent claim 1 is patentable over the cited references.

Independent claim 11 recites "a single adaptive filter having filter coefficients adapted to cancel an echo in a near end signal, the echo comprising an acoustic echo and an electrical echo." As discussed above, neither Eppler nor Finn, alone or in combination, teach or disclose the above limitation. Thus, independent claim 11 is patentable over the cited references.

Independent claim 22 includes, among other limitations "the second telephony comprising a single adaptive filter having filter coefficients adapted to cancel an echo in a near end signal, the echo comprising an acoustic echo and an electrical echo." As discussed above, neither Eppler nor Finn, alone or in combination, teach or disclose the above limitation. Therefore, independent claim 22 is also patentable over the cited references. Independent claim 33 includes, among other limitations "adaptively filtering the reference signal by a single adaptive filter." As argued above, neither Eppler nor Finn, alone or in combination, teach or disclose the above limitation. Consequently, independent claim 33 is also patentable over the cited references.

Independent claim 37 includes, among other limitations "a single adaptive filter for adaptively filtering the reference signal " As discussed above, neither Eppler nor Finn, alone or in combination, teach or disclose the above limitation. Thus, independent claim 37 is also patentable over the cited references.

**Appln No. 09/703,264**

**Amdt date July 15, 2004**

**Reply to Office action of April 15, 2004**

In short, the independent claims 1, 11, 22, 33, and 37 define a novel and unobvious invention over the cited references. Thus, these claims are allowable over the cited references. Dependent claims 2-10, 12-21, 23-32, 34-36, and 38-39 are dependent from these independent claims, respectively and include all the limitations of their respective independent claims and additional limitations therein. Accordingly, these claims are also allowable over the cited references, as being dependent from allowable independent claims and for the additional limitations they include therein.

In view of the foregoing amendments and remarks, it is respectfully submitted that this application is now in condition for allowance, and accordingly, reexamination and allowance are respectfully requested.

Respectfully submitted,  
CHRISTIE, PARKER & HALE, LLP

By



Raymond R. Tabandeh  
Reg. No. 43,945  
626/795-9900

RRT/clv

CLV PAS573389.1--07/15/04 9:40 AM